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A NEW MODEL FOR SKY COVER

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Scientific Report No. 5

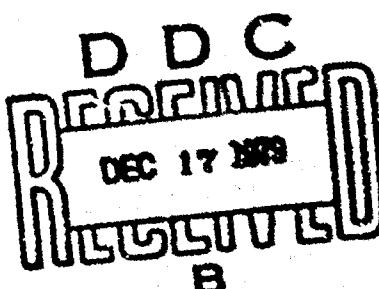
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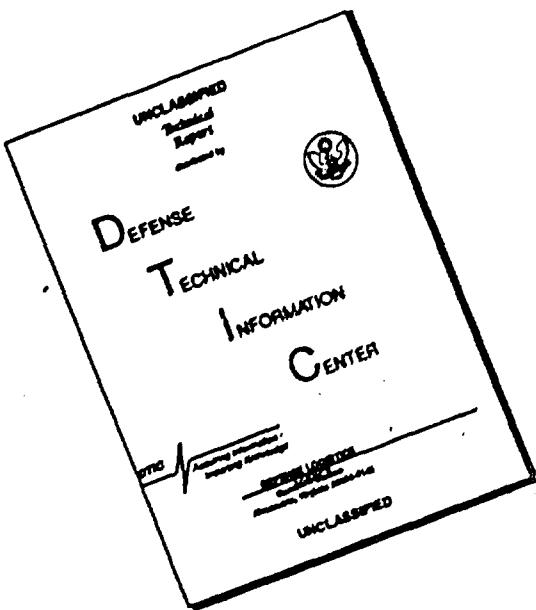
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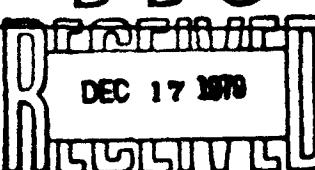


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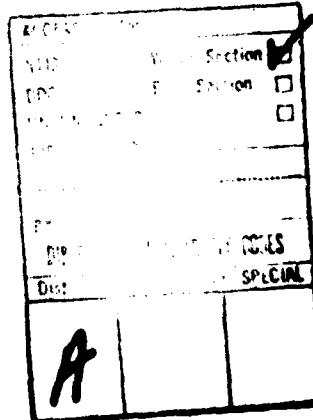
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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) The S-distribution, which has a closed form cumulative distribution function is used to model sky cover. Models are developed for 23 stations distributed throughout the world, one for each month and for each three-hour period of the day. Estimates of the amounts of error in using the model to predict cloud cover less than a stated amount are given.			

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## 1. INTRODUCTION

Sky cover records are available for many stations by month and time of day. To obtain the climatic probability of a sky cover condition at a specific location and for a given day and hour of the day, it is possible to retrieve these records and to obtain an empirical estimate. This can be a slow, cumbersome and costly process. In Scientific Report Number 2, two different models were developed so as to effectively compact the data and make possible rapid recall and reuse. The models were adapted for seven weather stations.

In this report we make use of a third model with two parameters and adapt it to 23 stations. The data used to develop the models was extracted from the "Revised Uniform Summary of Surface Weather Observations" (RUSSWO's) prepared by the Data Processing Division of the Air Weather Service, or the "Summary of Meteorological Observations, Surface" (SMOS) prepared by the Naval Weather Service Detachment. For each station 96 pairs of parameter values were found, one for each three-hour period of the day for each of the twelve months.

## 2. Modeling Skycover

A very elementary method of developing a model for data is the following. First make a histogram of the data, and then "smooth" the histogram to get a frequency distribution (probability density function). The probability of a value of the variable less than some fixed amount is then estimated by the proportion of the area under the frequency distribution to the left of that amount.

There are usually a number of curves or distributions which can be used to "fit" the data. In Scientific Report No. 2 both the Beta distribution and the Johnson  $S_g$  distribution were fit for sky cover data from Patrick Air Force Base. For the other six stations, only the Johnson distribution was fit. This was in spite of the fact that for Patrick Air Force Base, the Beta distribution gave a slightly better fit (in terms of the RMS of the differences between the model and the data). Obtaining probabilities using the Beta distribution is not easy. The cumulative probability density function (area under the probability density function to the left of a specified value) is not a closed form function. Thus, to obtain probabilities, tables or numerical integration or other approximate methods are required.

In this report we use what we call the  $S$ -distribution. As the authors intend to demonstrate in a later publication, almost any Beta distribution can be approximated very well with an  $S$ -distribution. Further, the  $S$  distribution has a closed-form cumulative distribution function. That is, probabilities can be obtained by direct substitution and no numerical integration or other approximations are required. The cumulative distribution function is given by

$$F(x) = 1 - (1-x^a)^{\beta} \quad a, \beta > 0, 0 \leq x \leq 1.$$

The probability density function is given by

$$f(x) = a\beta x^{\alpha-1} (1-x^a)^{\beta-1}$$

There are 11 categories of observed sky cover designated 0., .1, .2, ..., 1.0 in the RUSSO's. The interior boundaries between the eleven categories of skycover were taken to be .05, .15, ..., .95.

## 3. Estimation of the Parameter Values

A standard method of estimation of the parameters of a probability density function is the method of maximum likelihood. The maximum likelihood equations for the  $S$  distribution are

$$\frac{n}{a} + \left[ \frac{n}{\sum \ln(1-x_i^a)} + 1 \right] \sum \frac{x_i^a}{1-x_i^a} \ln x_i + \sum \ln x_i = 0$$

$$\beta = -n / \sum \ln(1-x_i^a).$$

The first equation is solved iteratively for  $\alpha$ , after which  $\beta$  can be obtained directly.

Instead of using the method of maximum likelihood to estimate  $\alpha$  and  $\beta$ , the following method was used\*. The values of the empirical cumulative distribution function were regressed on the  $S$  cumulative distribution function. Thus the resulting values of  $\alpha$  and  $\beta$  were those which minimized the sum of the squares of the differences between the model or theoretical cumulative distribution ( $S$ ) and the empirical cumulative distribution. This is the same as choosing those values of  $\alpha$  and  $\beta$  which minimize the sum of the squares of the differences between the empirical probabilities and the model theoretical probabilities. Since our object is not to estimate  $\alpha$  and  $\beta$  for their own sake, but only as a means of obtaining probabilities, the method has considerable intuitive appeal. It does indeed have a number of desirable properties which the authors intend to develop in a separate publication at a later date.

#### 4. Goodness of Fit of the Models

The goodness of fit of an individual model (specified station), month and hour period was measured in two ways. The root mean square (RMS) of the difference between the empirical and the model cumulative distribution functions at proportions of sky cover of .05, .15, .25, .35, .45, .55, .65, .75, .85, and .95 was calculated. Tables (4.1), (4.2), (4.3) show the root mean squares values for Saigon, Christchurch, Tripoli respectively. The fits for Saigon are average while the fits for Tripoli and Christchurch represent the "best" and "worst" fits, respectively.

Also, for each station, over all months and times of day, the proportion of time that the empirical and model cumulative distribution functions differed by at least .01 was calculated. The results are shown in Table 4.4. It is worth noting that the model values in an overwhelming proportion of cases are larger than the "observed" values for the probability of sky cover of .1 or .9. This is undoubtedly due to an observer's preference for stating "clear skies" rather than .1, and "overcast" rather than .9. We believe the model frequencies may thus, on the average, be better values than the "observed" values. This phenomenon would inflate the values of Table 4.4.

The "under-observing" of probabilities of sky cover of .1 and .9 has been noted by Brooks and Carruthers (1953) "Handbook of Statistical Methods in Meteorology", Her Majesty's Stationery Office, London; and mentioned by Essenwanger (1976) in "Applied Statistics in Atmospheric Science, Part A. Frequencies and Curve Fitting", Elsevier Scientific Publishing Company, Amsterdam.

\* A more detailed explanation of the method is planned for Scientific Report Number 8 "Use of Non-linear Regression to Estimate a Cumulative Distribution Function".

	Hour of Day							
	<u>01</u>	<u>04</u>	<u>07</u>	<u>10</u>	<u>13</u>	<u>16</u>	<u>19</u>	<u>22</u>
January	.042	.043	.047	.037	.033	.035	.040	.041
February	.048	.059	.058	.036	.037	.045	.047	.050
March	.060	.062	.045	.030	.034	.048	.057	.056
April	.052	.056	.040	.034	.040	.051	.051	.051
May	.036	.045	.043	.038	.036	.043	.042	.025
June	.030	.037	.043	.036	.030	.029	.025	.026
July	.033	.039	.047	.041	.034	.044	.040	.025
August	.028	.038	.044	.044	.029	.028	.034	.030
September	.037	.040	.055	.048	.034	.036	.039	.032
October	.037	.038	.050	.045	.044	.047	.042	.042
November	.047	.047	.050	.043	.045	.049	.045	.042
December	.046	.053	.045	.037	.040	.041	.041	.044

TABLE 4.1  
RMS of Individual Fits for Saigon (Sky Cover)

	Hour of Day							
	<u>01</u>	<u>04</u>	<u>07</u>	<u>10</u>	<u>13</u>	<u>16</u>	<u>19</u>	<u>22</u>
January	.040	.044	.061	.058	.059	.055	.062	.049
February	.029	.031	.059	.052	.059	.056	.061	.040
March	.026	.025	.061	.064	.061	.064	.060	.036
April	.029	.033	.050	.066	.054	.053	.043	.030
May	.027	.035	.050	.065	.054	.061	.040	.028
June	.026	.024	.035	.067	.062	.061	.040	.032
July	.034	.033	.043	.071	.053	.058	.042	.031
August	.033	.027	.041	.053	.055	.055	.046	.038
September	.035	.030	.055	.068	.055	.056	.052	.036
October	.030	.028	.054	.058	.058	.061	.068	.035
November	.032	.038	.057	.051	.053	.055	.065	.050
December	.032	.039	.066	.061	.050	.058	.071	.059

TABLE 4.2  
RMS of Individual Fits for Christchurch (Sky Cover)

	Hour of Day							
	<u>01</u>	<u>04</u>	<u>07</u>	<u>10</u>	<u>13</u>	<u>16</u>	<u>19</u>	<u>22</u>
January	.014	.019	.104	.015	.009	.013	.016	.020
February	.018	.013	.010	.011	.011	.010	.012	.019
March	.017	.016	.007	.014	.009	.007	.013	.016
April	.015	.015	.016	.010	.010	.008	.013	.017
May	.016	.011	.010	.013	.012	.009	.011	.015
June	.010	.010	.010	.010	.007	.008	.008	.009
July	.008	.011	.017	.014	.007	.005	.007	.007
August	.007	.008	.012	.016	.008	.006	.003	.007
September	.010	.014	.017	.016	.007	.007	.009	.008
October	.015	.012	.015	.016	.011	.013	.013	.015
November	.012	.018	.013	.014	.016	.013	.017	.014
December	.017	.017	.018	.014	.019	.020	.017	.018

TABLE 4.3  
RMS of Individual Fits for Tripoli (Sky Cover)

Ascension Island	.63
Balboa	.45
Bangor	.51
Bedford	.51
Bermuda	.65
Christchurch	.63
Furumaki	.49
Goose	.46
Hill A.F.B.	.37
Lajes Field	.47
Manila	.61
McMurdo	.51
Midway	.59
Mildenhall	.40
Nenana	.44
Okinawa	.54
Patrick A.F.B.	.57
Saigon	.63
Shemya	.37
Thule	.48
Torrejon	.39
Tripoli	.38
Wake Island	.80

TABLE 4.4

Proportion of Time that Empirical and Model  
Cumulative Distribution Functions Differ by at Least .01

Table 4.5 gives the observed and model values for the cumulative distribution function for Patrick Air Force Base for June, 1000 hours.

<u>Sky Cover Proportion</u>	<u>Observed Cumulative Frequency</u>	<u>Model Cumulative Frequency</u>	<u>Difference</u>
.05	.056	.055	.001
.15	.092	.138	-.046
.25	.181	.214	-.033
.35	.275	.288	-.013
.45	.386	.364	.022
.55	.483	.442	.041
.65	.558	.524	.034
.75	.639	.615	.024
.85	.714	.719	-.005
.95	.772	.857	-.085

TABLE 4.5

Observed and model values for the probability (cumulative frequency) that sky cover is less than the stated amount.

Patrick Air Force Base, June 1000 hours.

### 5. Use of the Models

Suppose one wishes to estimate the probability that the sky cover is less than .1, .5, .8 and .9 at Mildenhall in August at 1600 hours. Using the appropriate table in Section 6, we find that  $a = 1.53069$ ,  $b = .38301$ . Substituting these values in the model

$$P[X < x] = 1 - (1-x^a)^b$$

we estimate the required probabilities at .011, .150, .378 and .518 respectively.

It should be noted that our modeling procedure can be used to estimate  $P[X \leq x]$  for any value of  $x$  (sky cover), and not just the endpoints of the interval listed in the RUSSWO's.

6. Tables of Coefficients of the Individual Models

## PARAMETERS FOR 3-DISTRIBUTION - SKY COVER

## ASCENSION IS

JAN	0-2	3-5	6-8	9-11	12-14	15-17	18-20	21-23
ALPHA	0.044629	0.003354	1.19429	1.18696	1.32676	1.32095	1.03474	0.042569
BETA	0.774007	0.63567	0.644614	0.744712	0.97962	1.09946	0.912831	0.908759
FEB								
ALPHA	1.0976	1.23369	1.37084	1.53944	1.56704	1.44881	1.13977	1.04774
BETA	1.42677	1.34476	1.23054	1.00635	1.72765	1.74642	1.29883	1.24703
MAR								
ALPHA	1.0401	1.24466	1.30034	1.4862	1.32096	1.50097	1.13821	1.02114
BETA	1.37464	1.3614	1.04535	1.26503	1.32094	1.52479	1.27343	1.22066
APR								
ALPHA	1.19098	1.39733	1.79223	1.62362	1.62692	1.52266	1.32094	1.00765
BETA	1.08379	1.15467	1.00772	1.00386	0.981623	0.919292	0.997211	1.00717
MAY								
ALPHA	1.24196	1.33294	1.41033	1.43706	1.55204	1.49992	1.32097	1.22232
BETA	1.26821	1.34367	1.00397	1.07245	1.29438	1.21441	1.30473	1.40737
JUNE								
ALPHA	1.21311	1.23322	1.48614	1.26314	1.42368	1.40184	1.2546	1.17472
BETA	1.26579	1.04469	1.00043	1.07113	1.23497	1.15239	1.1096	1.20962
JULY								
ALPHA	1.29607	1.24626	1.22481	1.29726	1.36175	1.36174	1.07032	1.10129
BETA	1.33429	1.00512	0.90457	0.92462	1.1746	1.13363	1.13648	1.27136
AUG								
ALPHA	1.03998	1.11391	1.48823	1.37084	1.33674	1.20869	1.10499	0.999187
BETA	0.602613	0.329393	0.329995	0.62126	0.77318	0.778862	0.742387	0.601464
SEPT								
ALPHA	1.17794	1.22766	1.54012	1.55825	1.59007	1.24976	1.04092	0.985798
BETA	0.378309	0.346468	0.300003	0.400674	0.537918	0.542167	0.471509	0.422601
OCT								
ALPHA	0.978342	1.20046	1.77115	1.91774	2.099	1.64896	1.12667	0.768432
BETA	0.274006	0.201672	0.319266	0.401110	0.636039	0.600973	0.414267	0.324681
NOV								
ALPHA	1.04329	1.21766	1.67427	1.64426	1.59399	1.24972	1.19018	0.984994
BETA	0.339222	0.311466	0.338734	0.401000	0.63473	0.537901	0.403146	0.304301
DEC								
ALPHA	0.626632	0.706231	1.21369	1.46262	1.47236	1.26822	1.03768	0.748169
BETA	0.479617	0.402917	0.421064	0.597929	0.780438	0.772627	0.604687	0.57204

## PARAMETERS FOR S-DISTRIBUTION - SKY COVER

BALBOA									
JAN	0-2	3-5	6-8	9-11	12-14	15-17	18-20	21-23	
ALPHA	0.156304	0.1793	0.435793	0.771715	1.33454	1.0054	0.379634	0.223279	
BETA	0.697387	0.699394	0.743835	0.611697	1.02346	0.782563	0.699401	0.725474	
FEB	.	.	.	.	.	.	.	.	
ALPHA	0.151767	0.189764	0.571623	0.798407	1.4627	1.21521	0.383825	0.277724	
BETA	0.700428	0.709899	0.849938	1.02178	1.14392	0.863923	0.862126	0.903613	
MAR	.	.	.	.	.	.	.	.	
ALPHA	0.149971	0.294263	0.334006	0.796853	1.40421	1.04707	0.431238	0.207429	
BETA	0.640913	0.767417	0.680548	0.761411	0.815891	0.636796	0.676228	0.782083	
APR	.	.	.	.	.	.	.	.	
ALPHA	0.232364	0.387246	0.847714	1.48251	2.26422	1.82352	0.707021	0.300113	
BETA	0.579909	0.687141	0.531364	0.562037	0.380711	0.475443	0.303122	0.584678	
MAY	.	.	.	.	.	.	.	.	
ALPHA	0.310929	0.433426	1.73973	2.60067	3.20612	3.37423	1.37337	0.58883	
BETA	0.38435	0.414684	0.353041	0.386873	0.339939	0.268614	0.228914	0.307678	
JUNE	.	.	.	.	.	.	.	.	
ALPHA	0.804804	0.98084	2.49763	2.69507	3.22077	3.80965	2.42012	0.939286	
BETA	0.410437	0.416467	0.306718	0.25219	0.26423	0.214372	0.209473	0.297863	
JULY	.	.	.	.	.	.	.	.	
ALPHA	0.897064	1.01384	1.87473	2.49351	3.43574	3.97942	1.88725	0.871749	
BETA	0.393838	0.394103	0.242282	0.225178	0.223919	0.188614	0.199739	0.270397	
AUG	.	.	.	.	.	.	.	.	
ALPHA	0.884603	0.840104	1.98793	2.37374	3.60786	4.03428	1.80369	1.11814	
BETA	0.436387	0.372215	0.264082	0.230087	0.239833	0.186224	0.199828	0.329292	
SEPT	.	.	.	.	.	.	.	.	
ALPHA	0.936637	1.10389	2.29319	2.78199	2.80347	4.49333	2.20129	1.30023	
BETA	0.338719	0.443847	0.287393	0.291603	0.223086	0.198473	0.176272	0.306876	
OCT	.	.	.	.	.	.	.	.	
ALPHA	1.02863	1.06323	1.84409	2.91944	3.13676	3.89033	1.8478	1.22441	
BETA	0.403623	0.446637	0.296382	0.318778	0.267375	0.226699	0.171438	0.30678	
NOV	.	.	.	.	.	.	.	.	
ALPHA	0.962389	1.03081	1.30712	2.69874	2.63626	2.82828	1.22878	0.789816	
BETA	0.323662	0.387171	0.370091	0.367773	0.300164	0.241937	0.209018	0.336372	
DEC	.	.	.	.	.	.	.	.	
ALPHA	0.308784	0.294193	0.629971	0.943044	1.74747	1.20968	0.811626	0.310671	
BETA	0.342602	0.327419	0.463673	0.491523	0.529286	0.389841	0.362283	0.447996	

PARAMETERS FOR S-DISTRIBUTION - SKY COVER

BANGKOK									
JAN	0-2	3-5	6-8	9-11	12-14	15-17	18-20	21-23	
ALPHA	0.0130479	0.0136636	0.0866796	0.119364	0.137187	0.116424	0.0392923	0.0228279	
BETA	0.1166798	0.114763	0.150392	0.157722	0.157003	0.150014	0.142033	0.130421	
FEB	.	.	.	.	.	.	.	.	
ALPHA	0.00943393	0.00895716	0.0352243	0.0885607	0.126961	0.142913	0.0693924	0.020639	
BETA	0.120434	0.109479	0.143972	0.155462	0.163696	0.17388	0.180731	0.151553	
MAR	.	.	.	.	.	.	.	.	
ALPHA	0.0142698	0.0305842	0.129801	0.194399	0.169464	0.129136	0.0678992	0.0250079	
BETA	0.125132	0.140282	0.164812	0.187421	0.172247	0.165976	0.169207	0.142487	
APR	.	.	.	.	.	.	.	.	
ALPHA	0.0216773	0.0392464	0.127076	0.271917	0.398467	0.303324	0.172342	0.0457832	
BETA	0.116346	0.132801	0.139055	0.171909	0.189484	0.185406	0.179579	0.144284	
MAY	.	.	.	.	.	.	.	.	
ALPHA	0.0418102	0.168121	0.193098	0.38228	0.564618	0.563183	0.346897	0.0642677	
BETA	0.15748	0.192492	0.173687	0.210277	0.239133	0.236348	0.237964	0.174348	
JUNE	.	.	.	.	.	.	.	.	
ALPHA	0.072486	0.230745	0.258718	0.329811	0.699337	0.731029	0.524848	0.186734	
BETA	0.192232	0.21448	0.196018	0.241934	0.315877	0.31889	0.283615	0.254097	
JULY	.	.	.	.	.	.	.	.	
ALPHA	0.0438039	0.245381	0.244237	0.330027	1.01434	0.859919	0.539832	0.186886	
BETA	0.19422	0.239738	0.221415	0.318683	0.4324	0.420471	0.347284	0.284288	
AUG	.	.	.	.	.	.	.	.	
ALPHA	0.0189305	0.0649175	0.179703	0.447739	0.825683	0.63119	0.367389	0.0832871	
BETA	0.153627	0.19105	0.204206	0.327518	0.413294	0.40045	0.346409	0.239496	
SEPT	.	.	.	.	.	.	.	.	
ALPHA	0.0189802	0.0587943	0.153482	0.354381	0.457383	0.37851	0.182019	0.0317517	
BETA	0.172771	0.201688	0.211487	0.293354	0.320606	0.324734	0.293834	0.201776	
OCT	.	.	.	.	.	.	.	.	
ALPHA	0.0174219	0.0339452	0.145313	0.212897	0.28992	0.236382	0.0849674	0.0162797	
BETA	0.140853	0.1636379	0.18761	0.216966	0.281299	0.234737	0.216783	0.143581	
NOV	.	.	.	.	.	.	.	.	
ALPHA	0.0344964	0.0326043	0.153626	0.233219	0.263262	0.229982	0.0619889	0.0233099	
BETA	0.11435	0.115382	0.14468	0.140718	0.162663	0.173274	0.140731	0.119176	
DEC	.	.	.	.	.	.	.	.	
ALPHA	0.00892604	0.0186771	0.126482	0.181007	0.220918	0.148329	0.0442473	0.0160318	
BETA	0.109182	0.120193	0.178312	0.173977	0.193018	0.168431	0.169688	0.120013	

## PARAMETERS FOR S-DISTRIBUTION - SKY COVER

BEDFORD									
JAN	0-2	3-5	6-8	9-11	12-14	15-17	18-20	21-23	
ALPHA	0.00457925	0.0116937	0.0666323	0.0942354	0.146774	0.132328	0.0374595	0.0174149	
BETA	0.100939	0.115449	0.142775	0.151006	0.172134	0.180113	0.150375	0.13415	
FEB	.	.	.	.	.	.	.	.	
ALPHA	0.00290641	0.00409301	0.0846175	0.108272	0.146006	0.161152	0.061534	0.0186645	
BETA	0.103278	0.10259	0.169437	0.167684	0.181925	0.205235	0.194131	0.148768	
MAR	.	.	.	.	.	.	.	.	
ALPHA	0.0118544	0.0208157	0.0890982	0.127546	0.176109	0.196146	0.108516	0.033318	
BETA	0.124782	0.141746	0.170039	0.181978	0.185614	0.197278	0.192023	0.151245	
APR	.	.	.	.	.	.	.	.	
ALPHA	0.0214537	0.0517158	0.1092	0.238121	0.306364	0.338035	0.180903	0.0439927	
BETA	0.129492	0.147263	0.158451	0.191709	0.202803	0.217816	0.207373	0.152516	
MAY	.	.	.	.	.	.	.	.	
ALPHA	0.0470038	0.118155	0.184221	0.28534	0.490607	0.493382	0.27969	0.0949842	
BETA	0.165398	0.178198	0.186749	0.219307	0.26094	0.272385	0.232922	0.196765	
JUNE	.	.	.	.	.	.	.	.	
ALPHA	0.0364199	0.193419	0.168735	0.355302	0.736042	0.669861	0.427007	0.153014	
BETA	0.200047	0.249678	0.210949	0.27709	0.358348	0.354363	0.314423	0.267013	
JULY	.	.	.	.	.	.	.	.	
ALPHA	0.0791841	0.169126	0.220391	0.454027	0.953848	0.786216	0.48032	0.197081	
BETA	0.249008	0.252538	0.243226	0.327694	0.477082	0.436973	0.376763	0.336067	
AUG	.	.	.	.	.	.	.	.	
ALPHA	0.0442343	0.0991997	0.179173	0.352964	0.826381	0.599048	0.34463	0.093474	
BETA	0.213803	0.229492	0.232638	0.318605	0.433173	0.423642	0.38363	0.264821	
SEPT	.	.	.	.	.	.	.	.	
ALPHA	0.0153879	0.0317935	0.0851104	0.182473	0.338837	0.281091	0.131813	0.0265497	
BETA	0.169298	0.186771	0.196848	0.257209	0.330553	0.331504	0.271216	0.207242	
OCT	.	.	.	.	.	.	.	.	
ALPHA	0.0123681	0.0201314	0.117655	0.199405	0.195206	0.153382	0.0799177	0.028717	
BETA	0.173038	0.189629	0.223319	0.247373	0.272134	0.272338	0.235448	0.195197	
NOV	.	.	.	.	.	.	.	.	
ALPHA	0.00964237	0.0197336	0.187726	0.268891	0.298654	0.198726	0.0620071	0.0221668	
BETA	0.122423	0.149581	0.200063	0.199349	0.218089	0.20764	0.174934	0.149386	
DEC	.	.	.	.	.	.	.	.	
ALPHA	0.00871723	0.00993308	0.0786026	0.119091	0.214183	0.121481	0.0222664	0.0143737	
BETA	0.129932	0.12628	0.173809	0.177967	0.217373	0.202079	0.149988	0.141431	

## PARAMETERS FOR S-DISTRIBUTION - SKY COVER

		BERMUDA							
		0-2	3-5	6-8	9-11	12-14	15-17	18-20	21-23
JAN									
ALPHA	0.03297	0.794413	1.0585	1.10617	1.06276	1.01437	0.944463	0.887842	
BETA	0.349011	0.484601	0.485966	0.455111	0.433459	0.430016	0.464161	0.541439	
FEB									
ALPHA	0.686316	0.712638	1.06072	1.10117	1.06783	1.10862	1.07132	0.908806	
BETA	0.385051	0.353339	0.403141	0.394295	0.429346	0.407267	0.433171	0.423357	
MAR									
ALPHA	0.782166	0.780112	1.125	1.03534	1.04845	0.938365	1.02115	0.94107	
BETA	0.417984	0.381426	0.432497	0.442901	0.464511	0.399157	0.438333	0.461011	
APR									
ALPHA	0.379688	0.703827	0.960064	0.870736	0.746063	0.738533	0.739907	0.379968	
BETA	0.475024	0.52425	0.499364	0.500024	0.461914	0.462934	0.454289	0.498278	
MAY									
ALPHA	0.545532	0.638932	0.894423	0.844402	0.826116	0.763701	0.781234	0.610802	
BETA	0.478154	0.460137	0.453162	0.474583	0.474937	0.417046	0.438708	0.49434	
JUNE									
ALPHA	0.44963	0.622281	1.15184	1.0895	1.1254	1.04948	0.980364	0.741272	
BETA	0.360309	0.343316	0.303901	0.481807	0.307767	0.467721	0.475074	0.37334	
JULY									
ALPHA	1.00946	1.11140	1.20103	1.1817	1.1517	1.1108	0.991311	1.03602	
BETA	1.53384	1.47147	1.04834	0.965101	0.876030	0.81908	0.78998	1.33976	
AUG									
ALPHA	0.994876	0.994374	1.11977	1.06957	1.0806	1.11963	1.04204	1.01144	
BETA	1.34663	1.4531	1.01909	0.911453	0.83742	0.807382	0.822962	1.30401	
SEPT									
ALPHA	0.8969	0.911359	1.09994	1.104.9	1.19639	1.19629	1.00003	0.989077	
BETA	1.04961	1.04605	0.766844	0.677892	0.69165	0.687324	0.720075	0.982867	
OCT									
ALPHA	0.670981	0.667478	0.976744	0.981275	1.05417	0.930092	0.889711	0.756844	
BETA	0.366425	0.334003	0.311363	0.479441	0.300082	0.432462	0.407366	0.324423	
NOV									
ALPHA	0.731216	0.724071	1.04268	0.943078	1.000	0.999139	0.880753	0.770236	
BETA	0.393107	0.368576	0.426103	0.443264	0.320044	0.494346	0.352073	0.369988	
DEC									
ALPHA	0.76846	0.714398	1.01722	1.0796	0.959143	0.992663	0.874908	0.786611	
BETA	0.336427	0.39277	0.322196	0.496475	0.499021	0.667636	0.30701	0.323077	

## PARAMETERS FOR S-DISTRIBUTION - SKY COVER

## CHRISTCHURCH

JAN	0-2	3-5	6-8	9-11	12-14	15-17	18-20	21-23
ALPHA	0.300582	0.39237	0.993171	1.09582	1.09882	0.928305	0.876599	0.721648
BETA	0.263875	0.271783	0.390166	0.45985	0.505432	0.488289	0.437704	0.368313
FEB	.	.	.	.	.	.	.	.
ALPHA	0.139979	0.250866	0.750413	0.856873	0.685878	0.694366	0.64188	0.380374
BETA	0.221282	0.246696	0.334215	0.423687	0.41783	0.4253	0.359055	0.302926
MAR	.	.	.	.	.	.	.	.
ALPHA	0.173259	0.201004	0.667083	0.876826	1.0085	0.87847	0.667132	0.456794
BETA	0.217831	0.234502	0.329497	0.376023	0.449168	0.433549	0.349238	0.323131
APR	.	.	.	.	.	.	.	.
ALPHA	0.187733	0.194117	0.348608	0.593027	0.6518	0.534335	0.468874	0.282383
BETA	0.249004	0.255487	0.29249	0.373573	0.43814	0.41117	0.382338	0.322621
MAY	.	.	.	.	.	.	.	.
ALPHA	0.165208	0.202043	0.405237	0.722722	0.752695	0.62396	0.366787	0.238868
BETA	0.237331	0.251759	0.305632	0.377249	0.404662	0.38391	0.315696	0.257776
JUNE	.	.	.	.	.	.	.	.
ALPHA	0.124377	0.15022	0.216472	0.370912	0.457752	0.48056	0.316127	0.199976
BETA	0.247027	0.261024	0.28383	0.32795	0.394598	0.39729	0.338441	0.28168
JULY	.	.	.	.	.	.	.	.
ALPHA	0.121015	0.142076	0.232341	0.490029	0.545402	0.48727	0.328459	0.178946
BETA	0.230341	0.237307	0.267754	0.318271	0.359532	0.366358	0.342141	0.278487
AUG	.	.	.	.	.	.	.	.
ALPHA	0.159984	0.152356	0.271531	0.352349	0.622683	0.480593	0.33483	0.202377
BETA	0.25749	0.268247	0.295809	0.366083	0.422232	0.417766	0.368209	0.296425
SEPT	.	.	.	.	.	.	.	.
ALPHA	0.193446	0.236367	0.522542	0.644409	0.672065	0.67633	0.623465	0.308831
BETA	0.243004	0.271988	0.336572	0.359866	0.412319	0.418271	0.365468	0.296848
OCT	.	.	.	.	.	.	.	.
ALPHA	0.194209	0.246414	0.450763	0.606761	0.673626	0.559049	0.478074	0.300338
BETA	0.284406	0.330277	0.366782	0.40836	0.491117	0.455645	0.377583	0.330736
NOV	.	.	.	.	.	.	.	.
ALPHA	0.277535	0.33214	0.690724	0.684989	0.79378	0.816631	0.729151	0.556177
BETA	0.329934	0.338396	0.410253	0.428172	0.486155	0.478436	0.432119	0.379325
DEC	.	.	.	.	.	.	.	.
ALPHA	0.322769	0.448026	0.781014	0.870918	0.943892	0.986902	1.11183	0.693706
BETA	0.280972	0.317063	0.373381	0.423227	0.522871	0.484091	0.412603	0.376162

## PARAMETERS FOR S-DISTRIBUTION - SKY COVER

## FURUNAKI

JAN	0-2	3-5	6-8	9-11	12-14	15-17	18-20	21-23
ALPHA	0.417753	0.553653	0.913024	1.07498	1.32531	1.11877	0.63493	0.535161
BETA	0.24052	0.264384	0.339091	0.393457	0.396934	0.398956	0.340779	0.299649
JAN	.	.	.	.	.	.	.	.
FEB	.	.	.	.	.	.	.	.
ALPHA	0.403134	0.442557	0.696614	0.854391	1.03759	0.924973	0.573708	0.425127
BETA	0.284642	0.270164	0.324179	0.36645	0.370385	0.372536	0.358004	0.301378
MAR	.	.	.	.	.	.	.	.
ALPHA	0.226647	0.285043	0.310775	0.593418	0.902221	0.782772	0.482776	0.254511
BETA	0.27098	0.284526	0.291457	0.293716	0.310938	0.302133	0.28033	0.257563
APR	.	.	.	.	.	.	.	.
ALPHA	0.0483549	0.141796	0.239463	0.334653	0.388417	0.405773	0.287846	0.101802
BETA	0.168697	0.204328	0.198335	0.203889	0.244422	0.209939	0.210315	0.187616
MAY	.	.	.	.	.	.	.	.
ALPHA	0.0694087	0.133841	0.180073	0.319514	0.382626	0.34248	0.237619	0.0949847
BETA	0.16516	0.174463	0.163021	0.189186	0.196254	0.183732	0.19093	0.177776
JUNE	.	.	.	.	.	.	.	.
ALPHA	0.0967586	0.245253	0.32017	0.522116	0.498951	0.472234	0.413497	0.184134
BETA	0.112008	0.122767	0.120187	0.133676	0.173983	0.160893	0.151003	0.12675
JULY	.	.	.	.	.	.	.	.
ALPHA	0.11336	0.302018	0.644391	0.684667	0.687962	0.592979	0.582159	0.20734
BETA	0.1046	0.110169	0.12946	0.169141	0.182733	0.177842	0.166623	0.129461
AUG	.	.	.	.	.	.	.	.
ALPHA	0.160069	0.276068	0.314201	0.670285	0.999388	0.839638	0.630144	0.251546
BETA	0.163265	0.169714	0.170734	0.227254	0.268431	0.24371	0.222216	0.191697
SEPT	.	.	.	.	.	.	.	.
ALPHA	0.173934	0.214543	0.30515	0.834601	0.941128	0.77471	0.540001	0.269667
BETA	0.194943	0.199334	0.220097	0.267733	0.277782	0.249542	0.239724	0.221577
OCT	.	.	.	.	.	.	.	.
ALPHA	0.195113	0.169147	0.473476	0.527261	0.638293	0.439967	0.249332	0.106172
BETA	0.267349	0.272432	0.329046	0.320003	0.346634	0.299317	0.279434	0.272283
NOV	.	.	.	.	.	.	.	.
ALPHA	0.247126	0.244613	0.623159	0.701576	0.730062	0.700324	0.320070	0.271734
BETA	0.294234	0.279118	0.339313	0.381593	0.392593	0.37466	0.36646	0.291789
DEC	.	.	.	.	.	.	.	.
ALPHA	0.426994	0.437958	0.764105	0.868814	1.09424	0.927673	0.873061	0.469988
BETA	0.341012	0.316697	0.382491	0.397118	0.417617	0.384967	0.347746	0.34847

## PARAMETERS FOR S-DISTRIBUTION - SKY COVER

GOOSE									
JAN	0-2	3-5	6-8	9-11	12-14	15-17	18-20	21-23	
ALPHA	0.0390312	0.0251392	0.0967722	0.201094	0.234139	0.227187	0.0791505	0.0517661	
BETA	0.135119	0.113293	0.153777	0.177327	0.194259	0.178046	0.15512	0.144268	
FEB	.	.	.	.	.	.	.	.	
ALPHA	0.0376617	0.0272614	0.151018	0.210917	0.260368	0.295141	0.135765	0.0670071	
BETA	0.141818	0.132434	0.191717	0.207534	0.219145	0.233419	0.202622	0.166515	
MAR	.	.	.	.	.	.	.	.	
ALPHA	0.0330898	0.0307224	0.224342	0.234969	0.300187	0.330004	0.188593	0.0601228	
BETA	0.115852	0.12134	0.163403	0.166386	0.183024	0.202803	0.188674	0.138026	
APR	.	.	.	.	.	.	.	.	
ALPHA	0.0332349	0.167808	0.309438	0.462723	0.531435	0.513477	0.395181	0.117896	
BETA	0.101667	0.128941	0.144505	0.183773	0.19882	0.1963	0.177628	0.128671	
MAY	.	.	.	.	.	.	.	.	
ALPHA	0.219567	0.618331	0.700527	0.909572	0.743966	0.735035	0.674619	0.374138	
BETA	0.172631	0.229755	0.220499	0.270738	0.263037	0.275648	0.238631	0.209282	
JUNE	.	.	.	.	.	.	.	.	
ALPHA	0.437678	0.764138	0.76123	1.02407	1.34461	1.4941	1.13458	0.389781	
BETA	0.264285	0.284489	0.254908	0.287035	0.300588	0.381371	0.348496	0.306727	
JULY	.	.	.	.	.	.	.	.	
ALPHA	0.379149	0.773701	0.834573	1.26707	1.9791	1.72377	1.38462	0.653904	
BETA	0.252647	0.294107	0.286178	0.348457	0.470939	0.450141	0.418244	0.339974	
AUG	.	.	.	.	.	.	.	.	
ALPHA	0.250211	0.519905	0.759897	1.20052	1.8784	1.64362	1.04861	0.444897	
BETA	0.248424	0.300972	0.325707	0.400216	0.483639	0.461227	0.392616	0.304154	
SEPT	.	.	.	.	.	.	.	.	
ALPHA	0.177876	0.235903	0.734955	1.27501	1.99004	1.88056	0.797539	0.286546	
BETA	0.218208	0.23237	0.306326	0.374597	0.443648	0.472183	0.390345	0.238870	
OCT	.	.	.	.	.	.	.	.	
ALPHA	0.156653	0.204628	0.7228	0.96408	1.1905	0.964443	0.371796	0.17714	
BETA	0.161751	0.178064	0.259871	0.27299	0.292101	0.27993	0.209183	0.178676	
NOV	.	.	.	.	.	.	.	.	
ALPHA	0.140208	0.146307	0.379633	0.971057	0.701983	0.582061	0.223981	0.148343	
BETA	0.136638	0.139991	0.170241	0.186303	0.202799	0.197256	0.138	0.130663	
DEC	.	.	.	.	.	.	.	.	
ALPHA	0.0407774	0.0409785	0.146298	0.404728	0.432628	0.344408	0.122907	0.0737783	
BETA	0.157463	0.144743	0.178998	0.236444	0.289746	0.239468	0.204183	0.167007	

## PARAMETERS FOR S-DISTRIBUTION - SKY COVER

		MILL							
		0-2	3-5	6-8	9-11	12-14	15-17	18-20	21-23
JAN									
ALPHA	0.0754631	0.0457983	0.101562	0.180888	0.186661	0.289137	0.193226	0.114507	
BETA	0.157873	0.134351	0.134266	0.133357	0.135461	0.136085	0.170059	0.167257	
FEB									
ALPHA	0.0489312	0.0564525	0.156572	0.245472	0.303864	0.304351	0.200083	0.116739	
BETA	0.178142	0.139048	0.170238	0.168186	0.182033	0.182851	0.19342	0.192139	
MAR									
ALPHA	0.061422	0.0559048	0.144792	0.214804	0.325346	0.342167	0.226401	0.100088	
BETA	0.196916	0.181773	0.179617	0.190192	0.208339	0.21172	0.21222	0.206476	
APR									
ALPHA	0.0450095	0.0734378	0.182608	0.227784	0.399456	0.386825	0.273804	0.141097	
BETA	0.212249	0.20381	0.204876	0.20458	0.240504	0.238024	0.221741	0.234939	
MAY									
ALPHA	0.148721	0.179842	0.20926	0.247738	0.405024	0.399969	0.311126	0.236467	
BETA	0.33721	0.32287	0.272332	0.287002	0.33337	0.299927	0.269046	0.330234	
JUNE									
ALPHA	0.0935611	0.127347	0.141879	0.148759	0.242115	0.28276	0.190082	0.132008	
BETA	0.371202	0.363677	0.334299	0.345815	0.404638	0.378333	0.322778	0.361582	
JULY									
ALPHA	0.126615	0.20033	0.20798	0.186349	0.304057	0.321133	0.214332	0.174368	
BETA	0.344583	0.653215	0.574754	0.591244	0.77779	0.667313	0.469733	0.511087	
AUG									
ALPHA	0.117307	0.156229	0.226393	0.214979	0.343928	0.366745	0.230781	0.162907	
BETA	0.492898	0.552077	0.552752	0.548337	0.704352	0.653339	0.46163	0.496534	
SEPT									
ALPHA	0.0397117	0.0451128	0.110073	0.122823	0.158181	0.197441	0.133071	0.0676218	
BETA	0.349328	0.364457	0.396848	0.436389	0.49902	0.484256	0.422911	0.379837	
OCT									
ALPHA	0.0271967	0.0307559	0.0903645	0.090111	0.137804	0.148897	0.0780023	0.0340768	
BETA	0.270034	0.260574	0.279974	0.277238	0.305521	0.295339	0.300239	0.274467	
NOV									
ALPHA	0.0403819	0.0389142	0.114812	0.180301	0.220978	0.188283	0.140088	0.0680957	
BETA	0.194928	0.190624	0.206078	0.187707	0.196773	0.184657	0.21696	0.202634	
DEC									
ALPHA	0.0547004	0.0495143	0.120119	0.293109	0.266344	0.237717	0.137938	0.0764467	
BETA	0.1373	0.132678	0.149994	0.16026	0.18996	0.149727	0.150002	0.141553	

## PARAMETERS FOR S-DISTRIBUTION - SKY COVER

## LAJES FIELD

JAN	0-2	3-5	6-8	9-11	12-14	15-17	18-20	21-23
ALPHA	0.873188	0.913568	1.45692	1.82005	1.92205	1.91985	1.02067	0.882705
BETA	0.326824	0.331614	0.35445	0.332894	0.333198	0.353302	0.312149	0.321466
FEB	.	.	.	.	.	.	.	.
ALPHA	0.916265	0.87611	1.48203	2.11941	2.1926	1.91027	1.101	0.868564
BETA	0.328071	0.305848	0.337178	0.348637	0.376925	0.367194	0.301249	0.313766
MAR	.	.	.	.	.	.	.	.
ALPHA	0.773818	0.741331	1.33608	1.38202	1.39892	1.36488	1.12469	0.82073
BETA	0.327293	0.294216	0.327853	0.34052	0.361988	0.359698	0.330723	0.344144
APR	.	.	.	.	.	.	.	.
ALPHA	0.711074	0.791952	1.45293	1.86778	1.57663	1.64766	1.00367	0.739464
BETA	0.316105	0.303846	0.337934	0.39235	0.390399	0.406997	0.330138	0.32796
MAY	.	.	.	.	.	.	.	.
ALPHA	0.680748	0.677447	1.30447	1.38534	1.67829	1.39491	1.24602	0.761922
BETA	0.342678	0.333939	0.336357	0.402478	0.473434	0.461391	0.402044	0.34643
JUNE	.	.	.	.	.	.	.	.
ALPHA	0.465353	0.743054	1.2742	1.30244	1.59317	1.52302	1.07667	0.546636
BETA	0.322648	0.310124	0.369084	0.444421	0.518357	0.503241	0.40308	0.349776
JULY	.	.	.	.	.	.	.	.
ALPHA	0.372878	0.343418	0.814635	1.18741	1.20495	1.31308	0.96391	0.473827
BETA	0.342185	0.372883	0.402389	0.52189	0.632867	0.677987	0.52898	0.394618
AUG	.	.	.	.	.	.	.	.
ALPHA	0.473086	0.500167	0.936327	1.22896	1.31122	1.28174	0.886128	0.546764
BETA	0.473981	0.477933	0.518175	0.642972	0.769294	0.773438	0.631891	0.554047
SEPT	.	.	.	.	.	.	.	.
ALPHA	0.335134	0.702822	1.1666	1.3711	1.43117	1.36711	0.882712	0.621486
BETA	0.494467	0.566973	0.531218	0.573837	0.610293	0.596897	0.526629	0.485844
OCT	.	.	.	.	.	.	.	.
ALPHA	0.682736	0.834302	1.39264	1.84833	2.00378	1.76071	1.0037	0.772729
BETA	0.340364	0.384442	0.407301	0.461777	0.52386	0.470894	0.384004	0.384008
NOV	.	.	.	.	.	.	.	.
ALPHA	0.837321	0.763988	1.491	1.71329	2.07479	2.01048	1.13747	0.942326
BETA	0.330093	0.316446	0.369473	0.375046	0.420983	0.424008	0.378277	0.321914
DEC	.	.	.	.	.	.	.	.
ALPHA	0.877284	0.93946	1.57307	2.02338	2.06567	1.99622	1.02821	0.78891
BETA	0.339009	0.340023	0.367324	0.386621	0.385224	0.381923	0.318294	0.384928

## PARAMETERS FOR S-DISTRIBUTION - SKY COVER

## MANILA

JAN	0-2	3-5	6-8	9-11	12-14	15-17	18-20	21-23
ALPHA	0.706244	0.743847	0.898964	0.943716	0.973962	1.03313	0.754223	0.712789
BETA	0.633257	0.595909	0.511184	0.491748	0.43815	0.53813	0.510344	0.596548
FEB	.	.	.	.	.	.	.	.
ALPHA	0.723828	0.739838	0.891964	0.931185	0.977802	0.921612	0.724699	0.697192
BETA	0.639942	0.746933	0.483484	0.480967	0.509293	0.612398	0.676907	0.647161
MAR	.	.	.	.	.	.	.	.
ALPHA	0.703697	0.694886	0.726093	0.771867	0.818444	0.682011	0.6419	0.703188
BETA	1.12408	1.03713	0.7701	0.767102	0.770904	0.713081	0.768116	1.13176
APR	.	.	.	.	.	.	.	.
ALPHA	0.698213	0.890111	0.823829	0.884282	0.870408	0.891484	0.710134	0.734487
BETA	1.0984	1.32672	0.934491	0.984902	0.893894	0.897201	0.878388	1.24618
MAY	.	.	.	.	.	.	.	.
ALPHA	0.634847	1.0044	0.853614	0.969149	1.02743	0.781372	0.698437	0.742079
BETA	0.649798	1.01503	0.65004	0.704384	0.739485	0.633237	0.692194	0.708631
JUNE	.	.	.	.	.	.	.	.
ALPHA	1.00042	1.01912	1.13802	1.29842	1.240214	1.43498	1.24982	1.03178
BETA	0.412397	0.444978	0.342304	0.341601	0.320413	0.31411	0.297204	0.339446
JULY	.	.	.	.	.	.	.	.
ALPHA	1.22186	1.27433	1.02432	1.65768	1.39317	1.63799	1.38843	1.08901
BETA	0.312654	0.340006	0.314492	0.257109	0.242132	0.219207	0.20732	0.28628
AUG	.	.	.	.	.	.	.	.
ALPHA	1.34131	1.26103	1.38207	1.87911	1.37941	1.6676	1.52873	1.29736
BETA	0.223251	0.236432	0.215921	0.234635	0.203939	0.162764	0.140968	0.204468
SEPT	.	.	.	.	.	.	.	.
ALPHA	1.22061	1.37764	1.02269	2.00067	2.03811	2.04267	1.62867	1.279
BETA	0.216257	0.281792	0.230638	0.230356	0.234216	0.184621	0.166257	0.20367
OCT	.	.	.	.	.	.	.	.
ALPHA	0.771006	0.726421	0.970284	0.972246	1.13777	1.2407	0.904963	0.770972
BETA	0.269379	0.442357	0.365613	0.366181	0.334623	0.334621	0.314811	0.386662
NOV	.	.	.	.	.	.	.	.
ALPHA	0.724728	0.749899	0.931881	0.926483	1.22632	1.16814	0.816224	0.62018
BETA	0.538624	0.536613	0.426248	0.467484	0.464661	0.388237	0.417812	0.501242
DEC	.	.	.	.	.	.	.	.
ALPHA	0.774344	0.762381	0.887626	1.04129	1.1394	1.04008	0.678579	0.628708
BETA	0.594678	0.539261	0.436478	0.446127	0.421117	0.417508	0.442612	0.526747

## PARAMETERS FOR 8-DISTRIBUTION - SKY COVER

		MONTE CARLO								
		0-2	3-5	6-8	9-11	12-14	15-17	18-20	21-23	
JAN										
ALPHA	0.363512	0.37942	0.347318	0.417781	0.391827	0.37544	0.379115	0.384327		
BETA	0.309223	0.297034	0.272194	0.293004	0.309331	0.322511	0.328444	0.325114		
FEB										
ALPHA	0.414938	0.460273	0.404254	0.440303	0.387777	0.406531	0.397977	0.413518		
BETA	0.18937	0.193134	0.183978	0.188347	0.176792	0.196201	0.183998	0.194493		
MAR										
ALPHA	0.238679	0.300643	0.351381	0.326304	0.412059	0.417634	0.381198	0.281338		
BETA	0.164203	0.172023	0.170147	0.179923	0.204063	0.194774	0.188737	0.164153		
APR										
ALPHA	0.128113	0.0653924	0.0850309	0.151943	0.302208	0.282194	0.218957	0.144047		
BETA	0.221387	0.176482	0.176243	0.153395	0.17101	0.140008	0.160323	0.191218		
MAY										
ALPHA	0.0334571	0.0373284	0.0211929	0.046434	0.0884647	0.106879	0.089374	0.0394692		
BETA	0.189304	0.193438	0.166761	0.200031	0.200125	0.209834	0.212998	0.20912		
JUNE										
ALPHA	0.0291129	0.0418544	0.0229187	0.0730477	0.0675501	0.0771047	0.0411731	0.0394789		
BETA	0.157987	0.166193	0.150204	0.195961	0.187844	0.17842	0.166619	0.179819		
JULY										
ALPHA	0.0330451	0.0482267	0.0295591	0.0278929	0.0613723	0.0928911	0.0379957	0.0390643		
BETA	0.210347	0.217291	0.199334	0.207312	0.233867	0.239473	0.216383	0.192698		
AUG										
ALPHA	0.0515736	0.0491038	0.0431424	0.0667422	0.130501	0.17254	0.112212	0.042874		
BETA	0.236293	0.219067	0.220776	0.200004	0.179287	0.213153	0.248008	0.206573		
SEPT										
ALPHA	0.0700949	0.0921788	0.107307	0.154937	0.1607	0.182408	0.120611	0.130162		
BETA	0.200334	0.220201	0.180486	0.188086	0.19233	0.199672	0.19257	0.226214		
OCT										
ALPHA	0.182835	0.190003	0.197626	0.17512	0.185994	0.194124	0.161186	0.163335		
BETA	0.223901	0.210495	0.214297	0.204088	0.21733	0.226993	0.212048	0.214037		
NOV										
ALPHA	0.353846	0.310853	0.288907	0.284678	0.307227	0.319973	0.286494	0.312484		
BETA	0.301332	0.284793	0.304223	0.299839	0.279728	0.300078	0.211918	0.308218		
DEC										
ALPHA	0.264322	0.275365	0.32334	0.301182	0.276841	0.34178	0.262122	0.322819		
BETA	0.247383	0.241348	0.25211	0.251764	0.287924	0.300322	0.290004	0.305528		

## PARAMETERS FOR S-DISTRIBUTION - SKY COVER

## MIDWAY

JAN	0-2	3-5	6-8	9-11	12-14	15-17	18-20	21-23
ALPHA	0.690794	0.738209	1.05527	1.23478	1.09738	1.15473	1.05006	0.7736
BETA	0.504987	0.543422	0.62298	0.620966	0.565218	0.543727	0.510187	0.494844
FEB	.	.	.	.	.	.	.	.
ALPHA	0.761823	0.720701	1.077	1.12461	0.989317	1.08456	0.958365	0.760977
BETA	0.591033	0.527608	0.590334	0.523102	0.523251	0.556198	0.47788	0.524524
MAR	.	.	.	.	.	.	.	.
ALPHA	0.729796	0.801424	1.26664	1.47004	1.21485	1.27874	1.34748	0.818375
BETA	0.409723	0.426872	0.430515	0.458887	0.447598	0.458534	0.49051	0.448992
APR	.	.	.	.	.	.	.	.
ALPHA	0.482233	0.783466	1.35162	1.05044	1.07616	1.21115	1.26397	0.734147
BETA	0.440481	0.46183	0.520038	0.470127	0.52234	0.52414	0.469366	0.447165
MAY	.	.	.	.	.	.	.	.
ALPHA	0.797449	0.730938	1.33476	1.13361	1.04951	1.12243	1.26806	0.860485
BETA	0.687426	0.625849	0.616078	0.613016	0.624617	0.659498	0.676908	0.704877
JUNE	.	.	.	.	.	.	.	.
ALPHA	0.709346	0.803929	1.48365	1.23454	1.21498	1.2725	1.37012	0.922798
BETA	0.636729	0.703207	0.690734	0.667164	0.678772	0.648103	0.620764	0.698741
JULY	.	.	.	.	.	.	.	.
ALPHA	1.11132	1.046647	1.53507	1.60603	1.70227	1.71062	1.62504	1.32949
BETA	1.34914	1.24182	0.940918	1.03206	1.09398	1.02981	0.993492	1.41293
AUG	.	.	.	.	.	.	.	.
ALPHA	1.08338	1.05225	1.42349	1.41172	1.53074	1.57268	1.37755	1.25499
BETA	1.32638	1.46339	1.13754	1.0631	1.13472	1.16913	1.01224	1.40531
SEPT	.	.	.	.	.	.	.	.
ALPHA	1.09416	1.04755	1.33113	1.43539	1.46492	1.53644	1.37829	1.11243
BETA	1.32187	1.47134	1.14466	1.13523	1.14293	1.06609	1.0073	1.26701
OCT	.	.	.	.	.	.	.	.
ALPHA	0.999153	0.91918	1.08311	1.24646	1.27625	1.21573	1.29263	1.09827
BETA	0.991671	1.02139	0.823809	0.884065	0.884191	0.824428	0.833387	0.899229
NOV	.	.	.	.	.	.	.	.
ALPHA	0.883934	0.769138	1.07372	1.18119	1.13272	1.19686	1.10876	0.863263
BETA	0.763388	0.673498	0.699773	0.657111	0.634398	0.641787	0.642984	0.679467
DEC	.	.	.	.	.	.	.	.
ALPHA	0.826488	0.772968	1.09193	1.17321	1.13777	1.14813	1.08179	0.838212
BETA	0.619868	0.586031	0.631749	0.598873	0.596497	0.567939	0.582638	0.574208

## PARAMETERS FOR S-DISTRIBUTION - SKY COVER

## NILDEHNALL

		0-2	3-5	6-8	9-11	12-14	15-17	18-20	21-23
JAN									
ALPHA	0.0480973	0.0773904	0.195496	0.448463	0.524593	0.478922	0.137705	0.0795113	
BETA	0.10207	0.101120	0.136816	0.163632	0.157393	0.167772	0.132044	0.110509	
FEB									
ALPHA	0.0486204	0.0664924	0.267205	0.383744	0.604101	0.334282	0.200603	0.059967	
BETA	0.113364	0.117771	0.143876	0.135692	0.170291	0.174369	0.136404	0.125976	
MAR									
ALPHA	0.0353820	0.0710003	0.279819	0.267338	0.826473	0.692701	0.323913	0.0589604	
BETA	0.124279	0.136574	0.157293	0.162489	0.21294	0.219712	0.203979	0.143980	
APR									
ALPHA	0.0498331	0.172573	0.379682	0.681098	1.24995	1.02098	0.378157	0.108057	
BETA	0.167025	0.193401	0.191975	0.233261	0.287773	0.297403	0.223332	0.198474	
MAY									
ALPHA	0.0933714	0.296247	0.401514	1.03383	1.55323	1.22703	0.611827	0.21347	
BETA	0.216303	0.234978	0.213385	0.289975	0.340224	0.364191	0.298361	0.269972	
JUNE									
ALPHA	0.193844	0.309823	0.336035	0.729465	1.06776	0.819833	0.301383	0.267929	
BETA	0.201327	0.249847	0.220492	0.255089	0.292125	0.293014	0.29146	0.277319	
JULY									
ALPHA	0.179985	0.424172	0.382734	1.28413	2.0477	1.89092	1.06112	0.418422	
BETA	0.231817	0.238849	0.217602	0.288744	0.349749	0.383174	0.346278	0.291804	
AUG									
ALPHA	0.101364	0.334916	0.486003	1.12087	1.93553	1.53067	0.79651	0.24104	
BETA	0.2222917	0.230067	0.222394	0.3054	0.379749	0.38301	0.326659	0.264769	
SEPT									
ALPHA	0.0902234	0.172722	0.412003	0.941536	1.50042	0.779097	0.433287	0.121317	
BETA	0.201057	0.204204	0.242739	0.290013	0.367547	0.32062	0.26388	0.222576	
OCT									
ALPHA	0.0336411	0.0733913	0.300082	0.386176	0.618199	0.492924	0.176233	0.0702634	
BETA	0.144492	0.154798	0.177812	0.165392	0.266667	0.237067	0.207203	0.166811	
NOV									
ALPHA	0.106976	0.0881673	0.371070	0.577817	0.709744	0.602137	0.143703	0.0783332	
BETA	0.144622	0.1300233	0.177604	0.161266	0.197381	0.203525	0.187021	0.134676	
DEC									
ALPHA	0.0804937	0.0784702	0.216293	0.378446	0.329936	0.391343	0.109678	0.08714	
BETA	0.122072	0.119700	0.146647	0.150036	0.147689	0.163377	0.150401	0.134208	

## PARAMETERS FOR 5-DISTRIBUTION - SKY COVER

		NENANA								
		0-2	3-5	6-8	9-11	12-14	15-17	18-20	21-23	
JAN										
ALPHA	0.00337651	0.00327573	0.0216792	0.0519884	0.052023	0.0427714	0.0178267	0.0060126		
BETA	0.114814	0.108298	0.144036	0.153568	0.153181	0.147816	0.14379	0.124068		
FEB										
ALPHA	0.00977353	0.0153705	0.043566	0.077052	0.0620828	0.0750785	0.0386723	0.016199		
BETA	0.132977	0.13656	0.142432	0.154949	0.16189	0.160029	0.163105	0.153294		
MAR										
ALPHA	0.0219773	0.0269173	0.0647	0.062722	0.0790022	0.0689117	0.076662	0.0236457		
BETA	0.192271	0.174429	0.174854	0.188046	0.201238	0.188318	0.204266	0.189391		
APR										
ALPHA	0.0854377	0.156218	0.179008	0.180069	0.193921	0.217354	0.221535	0.1571		
BETA	0.212913	0.187086	0.174427	0.199973	0.216608	0.199104	0.208384	0.234302		
MAY										
ALPHA	0.192891	0.254449	0.191361	0.257149	0.449003	0.549224	0.55553	0.284756		
BETA	0.24426	0.244568	0.206422	0.229997	0.268734	0.276302	0.304476	0.265386		
JUNE										
ALPHA	0.503987	0.380664	0.351801	0.631076	1.09611	1.39773	0.99816	0.710995		
BETA	0.267326	0.223083	0.224168	0.301012	0.393669	0.441051	0.344498	0.317967		
JULY										
ALPHA	0.357412	0.415	0.343387	0.439597	0.797731	0.716922	0.677761	0.457076		
BETA	0.2014	0.183984	0.175476	0.208486	0.280649	0.292379	0.26841	0.222747		
AUG										
ALPHA	0.269299	0.381348	0.417421	0.39971	0.869006	1.00189	0.793846	0.387844		
BETA	0.168132	0.1622	0.151987	0.183894	0.24768	0.293261	0.240963	0.195337		
SEPT										
ALPHA	0.0826127	0.193373	0.332035	0.392094	0.414798	0.412604	0.290623	0.113145		
BETA	0.141363	0.145618	0.147303	0.166612	0.174014	0.173739	0.159636	0.142465		
OCT										
ALPHA	0.0610977	0.0630756	0.263629	0.292132	0.302991	0.278691	0.11892	0.0811062		
BETA	0.116871	0.117837	0.133416	0.127619	0.135412	0.129376	0.139182	0.132001		
NOV										
ALPHA	0.0264496	0.0237168	0.1006	0.191964	0.180026	0.0892969	0.0409842	0.0377344		
BETA	0.141178	0.134202	0.130102	0.166789	0.159876	0.127742	0.127531	0.140107		
DEC										
ALPHA	0.020169	0.0220228	0.0290073	0.126922	0.124774	0.0800796	0.0612169	0.057004		
BETA	0.140298	0.140348	0.143004	0.177237	0.178733	0.131666	0.161628	0.159008		

## PARAMETERS FOR S-DISTRIBUTION - BAY COVER

OKINAWA									
JAN	0-2	3-5	6-8	9-11	12-14	15-17	18-20	21-23	
ALPHA	0.482127	0.446932	0.781221	0.916921	1.142	1.02669	0.791849	0.552153	
BETA	0.233992	0.233489	0.270317	0.292226	0.327696	0.303134	0.271574	0.251632	
FEB	.	.	.	.	.	.	.	.	
ALPHA	0.349923	0.279472	0.42838	0.688559	0.748273	0.721052	0.484591	0.36381	
BETA	0.204783	0.18268	0.201099	0.238409	0.248217	0.23194	0.192099	0.205167	
MAR	.	.	.	.	.	.	.	.	
ALPHA	0.233939	0.295124	0.424444	0.45051	0.782468	0.748478	0.547129	0.375093	
BETA	0.171989	0.143677	0.177493	0.219217	0.243175	0.238259	0.214703	0.21042	
APR	.	.	.	.	.	.	.	.	
ALPHA	0.302636	0.350842	0.692738	0.78023	0.842798	0.708835	0.516119	0.275437	
BETA	0.215903	0.20483	0.235401	0.283117	0.269017	0.252254	0.229538	0.21233	
MAY	.	.	.	.	.	.	.	.	
ALPHA	0.32089	0.396394	1.04567	1.16847	1.27709	1.34719	0.897208	0.433594	
BETA	0.218123	0.227453	0.256916	0.263989	0.269341	0.273156	0.238897	0.219886	
JUNE	.	.	.	.	.	.	.	.	
ALPHA	0.429988	0.530529	1.24404	1.30834	1.61703	1.35882	1.21803	0.639418	
BETA	0.239335	0.270876	0.233819	0.265121	0.290325	0.269057	0.236066	0.297663	
JULY	.	.	.	.	.	.	.	.	
ALPHA	0.362116	0.396535	0.977075	1.22834	1.25547	1.32454	1.0628	0.611677	
BETA	0.430182	0.676707	0.490079	0.499637	0.477237	0.492507	0.46787	0.540063	
AUG	.	.	.	.	.	.	.	.	
ALPHA	0.457374	0.419679	0.87071	1.11902	.33239	1.20039	0.904491	0.567044	
BETA	0.523108	0.502308	0.517917	0.496465	0.524376	0.467977	0.423161	0.338193	
SEPT	.	.	.	.	.	.	.	.	
ALPHA	0.381251	0.407573	0.764508	1.20854	1.36456	1.21186	0.813326	0.522245	
BETA	0.388051	0.40827	0.361315	0.481647	0.671034	0.554917	0.490798	0.379904	
OCT	.	.	.	.	.	.	.	.	
ALPHA	0.333112	0.375953	0.691076	0.843059	0.981314	0.850102	0.600463	0.408043	
BETA	0.412623	0.446826	0.477893	0.499143	0.483088	0.426083	0.422292	0.447812	
NOV	.	.	.	.	.	.	.	.	
ALPHA	0.29998	0.297481	0.466737	0.69752	0.922278	0.856068	0.816404	0.364473	
BETA	0.309467	0.302438	0.330161	0.357444	0.382684	0.372687	0.336271	0.279674	
DEC	.	.	.	.	.	.	.	.	
ALPHA	0.466431	0.338149	0.482631	0.826748	0.940901	0.877038	0.800065	0.47310	
BETA	0.275497	0.263407	0.301607	0.317208	0.338846	0.309449	0.28475	0.276667	

## PARAMETERS FOR S-DISTRIBUTION - SKY COVER

## PATRICK

	JAN	0-2	3-5	6-8	9-11	12-14	15-17	18-20	21-23
ALPHA		0.0657347	0.0630993	0.191463	0.20497	0.347205	0.33449	0.209687	0.1253
BETA		0.289174	0.245678	0.237653	0.238798	0.301594	0.331284	0.330616	0.362986
FEB		.	.	.	.	.	.	.	.
ALPHA		0.0538794	0.0936834	0.150069	0.13437	0.235094	0.222501	0.193274	0.0761647
BETA		0.273947	0.281127	0.298012	0.217071	0.29154	0.290497	0.303935	0.304767
MAR		.	.	.	.	.	.	.	.
ALPHA		0.103898	0.123892	0.168098	0.213362	0.201064	0.349446	0.246137	0.0675119
BETA		0.275279	0.312903	0.26296	0.280214	0.260777	0.338669	0.307391	0.232099
APR		.	.	.	.	.	.	.	.
ALPHA		0.14334	0.128097	0.273414	0.287422	0.352973	0.288546	0.244781	0.158427
BETA		0.496043	0.434947	0.384303	0.421627	0.53281	0.457428	0.489295	0.523705
MAY		.	.	.	.	.	.	.	.
ALPHA		0.110149	0.27741	0.3551	0.45348	0.405941	0.333382	0.290416	0.201752
BETA		0.367473	0.345991	0.417463	0.537175	0.501867	0.369382	0.344566	0.400736
JUNE		.	.	.	.	.	.	.	.
ALPHA		0.354641	0.423215	0.52561	0.50482	0.646534	0.643078	0.762018	0.426367
BETA		0.323738	0.649272	0.479967	0.605393	0.496961	0.387672	0.357993	0.414346
JULY		.	.	.	.	.	.	.	.
ALPHA		0.352738	0.368394	0.810339	0.828276	0.779916	0.729788	0.607741	0.296257
BETA		0.327832	0.725017	0.477261	0.523711	0.423387	0.363422	0.230096	0.324913
AUG		.	.	.	.	.	.	.	.
ALPHA		0.29854	0.425091	0.706379	0.684782	0.706209	0.388872	0.414907	0.311978
BETA		0.32664	0.689615	0.749977	0.715649	0.575296	0.401658	0.369791	0.466691
SEPT		.	.	.	.	.	.	.	.
ALPHA		0.423913	0.414444	0.682369	0.790468	0.711873	0.644212	0.621788	0.346617
BETA		0.39361	0.639318	0.560493	0.517992	0.448932	0.361073	0.378397	0.466619
OCT		.	.	.	.	.	.	.	.
ALPHA		0.153187	0.208773	0.353477	0.357386	0.305941	0.337394	0.21434	0.178807
BETA		0.387907	0.399617	0.344712	0.344798	0.388493	0.332474	0.382718	0.340739
NOV		.	.	.	.	.	.	.	.
ALPHA		0.0748309	0.0779766	0.136198	0.167087	0.259262	0.349798	0.117768	0.070997
BETA		0.029297	0.397761	0.358098	0.370939	0.244363	0.400673	0.341324	0.386637
DEC		.	.	.	.	.	.	.	.
ALPHA		0.0341226	0.0410132	0.0744738	0.0610008	0.228901	0.222283	0.166974	0.0326348
BETA		0.340461	0.327633	0.307998	0.280432	0.457119	0.447687	0.370594	0.394694

## PARAMETERS FOR S-DISTRIBUTION - DAY COVER

SAIGON									
JAN	0-2	3-5	6-8	9-11	12-14	15-17	18-20	21-23	
ALPHA	1.24167	1.2149	1.35042	1.03723	1.48333	1.8045	1.41227	1.17864	
BETA	1.45216	1.40074	1.16222	1.15957	1.18293	1.15118	1.14372	1.23165	
FEB	.	.	.	.	.	.	.	.	
ALPHA	1.33027	1.48651	1.5949	1.30718	1.96069	1.96742	1.76458	1.76769	
BETA	2.4918	2.30534	1.64306	1.50616	1.64043	1.73779	2.37441	3.19959	
MAR	.	.	.	.	.	.	.	.	
ALPHA	1.86105	1.71777	1.45234	1.34483	2.16055	1.90845	1.85843	2.36918	
BETA	3.25877	2.52092	1.18973	1.239	1.57074	2.03362	2.60265	5.40649	
APR	.	.	.	.	.	.	.	.	
ALPHA	1.94674	2.09177	2.09102	2.29727	3.16339	1.9454	1.69292	1.87033	
BETA	1.87315	2.23164	1.57325	1.57694	1.86393	1.50323	1.33385	1.88672	
MAY	.	.	.	.	.	.	.	.	
ALPHA	2.08867	2.03011	2.42374	3.59818	5.33947	4.18379	3.74143	2.09439	
BETA	0.718803	0.753691	0.892649	1.25233	1.57123	0.972413	0.697222	0.831217	
JUNE	.	.	.	.	.	.	.	.	
ALPHA	2.18023	2.07626	2.48984	3.80398	6.81402	8.27792	7.05837	2.47832	
BETA	0.721261	0.940682	0.901102	1.30187	1.83267	1.61119	1.62049	0.396695	
JULY	.	.	.	.	.	.	.	.	
ALPHA	2.11481	2.10042	3.17092	4.32151	6.19785	6.47361	6.82031	2.32853	
BETA	0.65431	0.809394	0.898979	1.21703	1.82818	1.21107	0.932338	0.53717	
AUG	.	.	.	.	.	.	.	.	
ALPHA	2.75663	2.52316	4.24964	6.37744	9.92711	12.2592	8.72975	3.35263	
BETA	0.672824	0.782493	1.01484	1.63752	2.81819	2.33991	1.69329	0.8992	
SEPT	.	.	.	.	.	.	.	.	
ALPHA	2.83386	2.42456	4.31689	6.02513	10.301	11.2467	6.27186	2.99323	
BETA	0.646339	0.788974	1.0678	1.50623	2.80163	2.13077	0.873976	0.388116	
OCT	.	.	.	.	.	.	.	.	
ALPHA	2.48743	2.26003	3.21309	3.21016	5.44666	7.68151	4.16102	2.81629	
BETA	0.816492	0.93215	0.929047	1.10691	1.66883	1.62471	0.798823	0.700052	
NOV	.	.	.	.	.	.	.	.	
ALPHA	2.14863	1.88439	1.7929	1.86831	4.02206	3.42488	2.67834	2.81676	
BETA	1.26237	1.17304	0.779964	0.890968	1.88163	1.61366	0.883308	1.00928	
DEC	.	.	.	.	.	.	.	.	
ALPHA	1.99621	1.61204	1.83627	1.86829	2.70067	2.36873	2.07066	1.70055	
BETA	1.20864	1.39412	0.834486	1.00372	1.19818	1.00008	0.788231	1.20000	

## PARAMETERS FOR S-DISTRIBUTION - SKY COVER

## SHENYA

	JAN	0-2	3-5	6-8	9-11	12-14	15-17	18-20	21-23
ALPHA		0.634603	0.689856	0.724215	1.64504	1.67512	1.56720	0.884991	0.715901
BETA		0.190712	0.180322	0.183023	0.290115	0.261310	0.252446	0.187694	0.192005
FEB		.	.	.	.	.	.	.	.
ALPHA		0.708179	0.762479	1.06601	1.60386	1.70973	1.76402	1.3169	0.851931
BETA		0.19946	0.189034	0.218876	0.267644	0.276944	0.278448	0.21372	0.210016
MAR		.	.	.	.	.	.	.	.
ALPHA		0.614234	0.703247	1.23075	1.60081	1.71649	1.80741	1.36727	0.727361
BETA		0.173222	0.172039	0.211306	0.244841	0.259336	0.272481	0.217604	0.186155
APR		.	.	.	.	.	.	.	.
ALPHA		0.53253	0.913014	1.44134	1.44175	1.63907	1.72059	1.2784	0.76881
BETA		0.109271	0.126626	0.162611	0.1632	0.17963	0.19924	0.162104	0.132446
MAY		.	.	.	.	.	.	.	.
ALPHA		0.738164	1.18034	1.78809	1.67934	1.3391	1.06904	1.16151	0.942694
BETA		0.0710025	0.0832045	0.103387	0.111137	0.126537	0.116364	0.117242	0.0880082
JUNE		.	.	.	.	.	.	.	.
ALPHA		0.46220	1.10058	1.38647	1.91338	1.12398	1.17071	0.904242	0.744698
BETA		0.0222432	0.032001	0.0443413	0.0731706	0.0723333	0.0764261	0.0337217	0.0315421
JULY		.	.	.	.	.	.	.	.
ALPHA		0.479937	0.81367	1.14773	1.1088	0.921773	0.698257	0.740081	0.444218
BETA		0.0245234	0.0260576	0.0293934	0.0425134	0.0482509	0.0388052	0.0373614	0.0244054
AUG		.	.	.	.	.	.	.	.
ALPHA		0.187823	0.388977	1.12728	0.991354	0.982733	0.785483	0.610032	0.32072
BETA		0.0329432	0.0357078	0.0444738	0.0701123	0.0623326	0.0684463	0.0397578	0.0447499
SEPT		.	.	.	.	.	.	.	.
ALPHA		0.230347	0.339317	0.674713	0.717118	0.703116	0.687802	0.614214	0.342724
BETA		0.104212	0.113226	0.146721	0.166198	0.170726	0.174013	0.156073	0.124184
OCT		.	.	.	.	.	.	.	.
ALPHA		0.204203	0.240397	0.872434	1.22369	1.26227	1.23008	0.9969	0.677469
BETA		0.193472	0.201447	0.23338	0.271239	0.276803	0.271928	0.231393	0.223443
NOV		.	.	.	.	.	.	.	.
ALPHA		0.708339	0.700478	0.870081	1.80779	1.49048	1.36849	0.971648	0.737422
BETA		0.246176	0.214284	0.230684	0.286966	0.278638	0.276374	0.2601	0.237119
DEC		.	.	.	.	.	.	.	.
ALPHA		0.643834	0.688242	0.686607	1.58418	1.6328	1.4912	0.810431	0.677924
BETA		0.221566	0.200779	0.196933	0.267698	0.262222	0.260437	0.210178	0.199778

## PARAMETERS FOR S-DISTRIBUTION - SAY COVER

	THULE								
JAN	0-2	3-5	6-8	9-11	12-14	15-17	18-20	21-23	
ALPHA	0.022431	0.020765	0.0222171	0.0352733	0.0629818	0.0592623	0.0271254	0.0277937	
BETA	0.203903	0.200415	0.201061	0.247199	0.225415	0.254504	0.21997	0.214958	
FEB	.	.	.	.	.	.	.	.	
ALPHA	0.0220235	0.0216335	0.0592671	0.0620273	0.0607788	0.0708242	0.045577	0.0251821	
BETA	0.183982	0.192278	0.230125	0.180931	0.174633	0.195839	0.205906	0.190006	
MAR	.	.	.	.	.	.	.	.	
ALPHA	0.0280555	0.0607468	0.0937227	0.0765641	0.0537349	0.0487362	0.0719751	0.0392428	
BETA	0.243284	0.285311	0.277459	0.235942	0.202964	0.206946	0.243487	0.240073	
APR	.	.	.	.	.	.	.	.	
ALPHA	0.0363179	0.0461979	0.0583546	0.0471613	0.0310981	0.0449249	0.03317	0.0416614	
BETA	0.199678	0.218907	0.23672	0.20737	0.180066	0.20487	0.192932	0.20716	
MAY	.	.	.	.	.	.	.	.	
ALPHA	0.108346	0.1005	0.105571	0.120245	0.147078	0.153821	0.152674	0.152824	
BETA	0.152451	0.147873	0.153382	0.16923	0.188644	0.174843	0.21127	0.20144	
JUNE	.	.	.	.	.	.	.	.	
ALPHA	0.188722	0.246954	0.216607	0.223771	0.273111	0.221019	0.21273	0.146444	
BETA	0.15385	0.164374	0.199234	0.172065	0.201828	0.183919	0.183863	0.183186	
JULY	.	.	.	.	.	.	.	.	
ALPHA	0.255024	0.212268	0.215611	0.277812	0.30786	0.339353	0.270385	0.264771	
BETA	0.149266	0.132093	0.135064	0.188273	0.173118	0.191233	0.171387	0.160714	
AUG	.	.	.	.	.	.	.	.	
ALPHA	0.148642	0.170943	0.177037	0.21382	0.24513	0.14542	0.168787	0.172878	
BETA	0.140637	0.150102	0.153798	0.173477	0.183569	0.180139	0.146381	0.139438	
SEPT	.	.	.	.	.	.	.	.	
ALPHA	0.0733277	0.0974516	0.146385	0.136432	0.192234	0.123006	0.0973824	0.0720395	
BETA	0.162218	0.149997	0.167263	0.169912	0.172164	0.151603	0.161779	0.132278	
OCT	.	.	.	.	.	.	.	.	
ALPHA	0.035229	0.0616779	0.124353	0.108303	0.117939	0.131797	0.0804714	0.048007	
BETA	0.136783	0.1346279	0.134176	0.127373	0.138281	0.104607	0.132049	0.132204	
NOV	.	.	.	.	.	.	.	.	
ALPHA	0.0333546	0.0438883	0.0642982	0.118796	0.127669	0.0982844	0.0380777	0.0313438	
BETA	0.139692	0.171744	0.194663	0.20278	0.181677	0.194694	0.187098	0.180008	
DEC	.	.	.	.	.	.	.	.	
ALPHA	0.0240842	0.0186323	0.0222426	0.034381	0.0772044	0.0390603	0.0197623	0.0091408	
BETA	0.173678	0.168862	0.167308	0.211173	0.221827	0.205914	0.170007	0.171008	

## PARAMETERS FOR S-DISTRIBUTION - SKY COVER

## TORREJON

JAN	0-2	3-5	6-8	9-11	12-14	15-17	18-20	21-23
ALPHA	0.0722673	0.0393804	0.117978	0.127768	0.181456	0.280996	0.232032	0.118749
BETA	0.193404	0.172858	0.179238	0.149686	0.172984	0.214468	0.235937	0.242802
FEB	.	.	.	.	.	.	.	.
ALPHA	0.0943327	0.0778587	0.13546	0.147778	0.213631	0.272099	0.218431	0.112625
BETA	0.274281	0.2346871	0.233275	0.209477	0.229069	0.286221	0.293005	0.283112
MAR	.	.	.	.	.	.	.	.
ALPHA	0.122914	0.108023	0.169756	0.196362	0.323242	0.374495	0.296888	0.283492
BETA	0.316623	0.279499	0.244293	0.227742	0.280512	0.27533	0.293167	0.370277
APR	.	.	.	.	.	.	.	.
ALPHA	0.201079	0.247059	0.300422	0.382642	0.367445	0.654831	0.367064	0.307346
BETA	0.390379	0.415279	0.329591	0.344107	0.335824	0.37873	0.403211	0.433604
MAY	.	.	.	.	.	.	.	.
ALPHA	0.219572	0.272777	0.252376	0.253474	0.419205	0.392833	0.469767	0.337291
BETA	0.300237	0.323464	0.383832	0.356187	0.394404	0.462888	0.407534	0.520851
JUNE	.	.	.	.	.	.	.	.
ALPHA	0.177343	0.220759	0.222199	0.276784	0.443998	0.312408	0.38187	0.240075
BETA	0.323183	0.321113	0.404303	0.454082	0.307371	0.468791	0.430478	0.380292
JULY	.	.	.	.	.	.	.	.
ALPHA	0.0783852	0.136392	0.128287	0.138216	0.323991	0.414196	0.304828	0.188643
BETA	0.780157	0.716143	0.791475	0.876017	1.03082	1.03123	0.908272	0.630075
AUG	.	.	.	.	.	.	.	.
ALPHA	0.0728272	0.101298	0.196448	0.209098	0.714001	0.382468	0.283924	0.147287
BETA	0.644612	0.673486	0.766346	0.828268	0.793949	0.722433	0.676336	0.746413
SEPT	.	.	.	.	.	.	.	.
ALPHA	0.106474	0.104097	0.219223	0.251344	0.346601	0.388129	0.341269	0.214622
BETA	0.471541	0.462022	0.46218	0.466442	0.462057	0.468237	0.316864	0.327672
OCT	.	.	.	.	.	.	.	.
ALPHA	0.064848	0.0700097	0.187138	0.201496	0.277943	0.277408	0.213574	0.0961719
BETA	0.307731	0.311938	0.323679	0.333783	0.334688	0.347899	0.374763	0.34368
NOV	.	.	.	.	.	.	.	.
ALPHA	0.0571220	0.0674687	0.187338	0.171338	0.206728	0.222894	0.226688	0.169636
BETA	0.281654	0.236798	0.22138	0.188904	0.226884	0.246671	0.274638	0.269138
DEC	.	.	.	.	.	.	.	.
ALPHA	0.0429818	0.04885121	0.138388	0.198672	0.24697	0.282863	0.191404	0.106734
BETA	0.219427	0.207741	0.247033	0.238746	0.263687	0.244872	0.288811	0.275364

## PARAMETERS FOR S-DISTRIBUTION - SKY COVER

## TRIPOLI

JAN	0-2	3-5	6-8	9-11	12-14	15-17	18-20	21-23
ALPHA	0.170903	0.142503	0.332771	0.361322	0.365924	0.424559	0.308911	0.247238
BETA	0.441147	0.402046	0.454684	0.4222	0.427033	0.451531	0.478121	0.503898
FEB	.	.	.	.	.	.	.	.
ALPHA	0.156022	0.148262	0.361032	0.294636	0.337834	0.341273	0.275267	0.207851
BETA	0.493993	0.482502	0.519698	0.442992	0.467397	0.478819	0.519027	0.571218
MAR	.	.	.	.	.	.	.	.
ALPHA	0.164391	0.223678	0.394936	0.384138	0.376744	0.344978	0.284255	0.190921
BETA	0.503393	0.537	0.492468	0.501802	0.511617	0.477771	0.491334	0.520914
APR	.	.	.	.	.	.	.	.
ALPHA	0.142628	0.233444	0.327519	0.270779	0.24775	0.207972	0.240754	0.171183
BETA	0.486238	0.539451	0.489145	0.441136	0.435435	0.383651	0.47438	0.509365
MAY	.	.	.	.	.	.	.	.
ALPHA	0.10622	0.178192	0.202709	0.183525	0.183854	0.177724	0.208085	0.148316
BETA	0.516378	0.541581	0.438321	0.458988	0.475101	0.445315	0.49492	0.554601
JUNE	.	.	.	.	.	.	.	.
ALPHA	0.0498187	0.135496	0.161473	0.129734	0.112859	0.0980144	0.130254	0.0850718
BETA	0.509138	0.380533	0.53693	0.561246	0.571421	0.530212	0.576712	0.612961
JULY	.	.	.	.	.	.	.	.
ALPHA	0.0607976	0.107261	0.193181	0.236407	0.215324	0.116826	0.103652	0.0784512
BETA	0.799933	0.780932	0.947933	1.42181	1.61572	1.14975	1.00298	0.958728
AUG	.	.	.	.	.	.	.	.
ALPHA	0.0920799	0.120257	0.172121	0.232838	0.19611	0.11129	0.118636	0.107542
BETA	1.12133	0.979109	1.03415	1.42031	1.57307	1.14897	1.19527	1.30039
SEPT	.	.	.	.	.	.	.	.
ALPHA	0.11383	0.198684	0.29928	0.267936	0.231229	0.203993	0.191158	0.146886
BETA	0.832524	0.966879	0.878813	0.85739	0.806128	0.739002	0.79007	0.842399
OCT	.	.	.	.	.	.	.	.
ALPHA	0.175333	0.203401	0.433375	0.471378	0.429859	0.398952	0.279754	0.212188
BETA	0.657837	0.638167	0.49844	0.690133	0.629619	0.583794	0.631492	0.672643
NOV	.	.	.	.	.	.	.	.
ALPHA	0.215674	0.287966	0.307219	0.436167	0.338629	0.301972	0.347983	0.282876
BETA	0.572291	0.625132	0.569693	0.493849	0.586478	0.588953	0.612448	0.577908
DEC	.	.	.	.	.	.	.	.
ALPHA	0.214008	0.199004	0.436737	0.373208	0.441478	0.481088	0.337462	0.249031
BETA	0.482791	0.469887	0.482443	0.417687	0.439362	0.486742	0.478484	0.508576

## PARAMETERS FOR 8-DISTRIBUTION - SKY COVER

## MAINE ISLAND

JAN	0-2	3-5	6-8	9-11	12-14	15-17	18-20	21-23
ALPHA	0.609177	0.593923	0.645092	0.597837	0.630588	0.644672	0.642631	0.642661
BETA	0.851076	0.739403	0.689064	0.676364	0.700976	0.863152	0.890104	0.921001
FEB	.	.	.	.	.	.	.	.
ALPHA	0.34591	0.411843	0.439284	0.420228	0.569907	0.409017	0.34544	0.336767
BETA	0.86731	0.810527	0.803927	0.819703	0.837906	0.873961	0.871483	0.864781
MAR	.	.	.	.	.	.	.	.
ALPHA	0.620394	0.650938	0.691325	0.651285	0.700258	0.721019	0.751512	0.689486
BETA	0.790052	0.706633	0.781107	0.810051	0.737468	0.921361	0.936634	1.10288
APR	.	.	.	.	.	.	.	.
ALPHA	0.676007	0.701711	0.818035	0.692658	0.706214	0.821573	0.804728	0.701422
BETA	0.893789	0.81207	0.786401	0.72227	0.764485	0.847321	0.896318	0.987017
MAY	.	.	.	.	.	.	.	.
ALPHA	0.763117	0.819331	0.791832	0.713968	0.769254	0.848333	0.836003	0.774913
BETA	1.00204	0.938175	0.720018	0.714641	0.739274	0.774564	0.804144	0.999886
JUNE	.	.	.	.	.	.	.	.
ALPHA	0.725179	0.674774	0.718502	0.891122	0.844631	0.820094	0.770071	0.841613
BETA	1.36306	1.03834	0.863002	0.82001	0.733921	0.733094	0.762301	1.15786
JULY	.	.	.	.	.	.	.	.
ALPHA	0.772193	0.7912	0.883644	0.744631	0.740688	0.762348	0.728367	0.708326
BETA	0.704747	0.611073	0.492413	0.44462	0.42398	0.390011	0.377268	0.389187
AUG	.	.	.	.	.	.	.	.
ALPHA	0.572269	0.663865	0.807131	0.732914	0.764359	0.781902	0.69246	0.574122
BETA	0.478932	0.522951	0.492778	0.433238	0.439911	0.411282	0.386516	0.457687
SEPT	.	.	.	.	.	.	.	.
ALPHA	0.693423	0.789394	0.774674	0.710027	0.783671	0.780018	0.640024	0.599499
BETA	0.643282	0.724593	0.549196	0.474111	0.484273	0.484797	0.468429	0.563834
OCT	.	.	.	.	.	.	.	.
ALPHA	0.603013	0.673048	0.743718	0.696884	0.631257	0.689497	0.637327	0.584264
BETA	0.581074	0.629971	0.5257	0.491473	0.443597	0.440127	0.474327	0.54134
NOV	.	.	.	.	.	.	.	.
ALPHA	0.742114	0.731159	0.824563	0.764933	0.709984	0.854679	0.867391	0.719989
BETA	1.03002	1.000059	0.990057	0.911319	0.884494	0.947616	1.00000	0.992637
DEC	.	.	.	.	.	.	.	.
ALPHA	0.764447	0.774186	0.770478	0.647981	0.73101	0.791997	0.772992	0.677785
BETA	1.23013	1.25632	0.987213	0.874377	0.977942	1.03031	1.06644	1.11302